

## CLAIMS

What is claimed is:

1. A method of forwarding diagnostic messages among members of groups in a  
2 data processing system while the members are executing protocols, comprising the  
3 steps of:

4 attaching a header to the message, the header including the following header  
5 fields:

6 (1) a protocol handle identifying the originator protocol from which  
7 the request originated; and

8 (2) a forwarding handle identifying, if present, a protocol which is  
9 the current parent of the protocol;

10 sending the diagnostic message to the member of the group identified by the  
11 forwarding handle.

12. The method of Claim 1, wherein the identified forwarding handle is of null  
13 value and the protocol is an original protocol, and said step of sending comprises:

14 sending the diagnostic message to the member of the group which originated  
15 the protocol.

16. The method of Claim 2, further including the step of:

17 including in the header to the message an identifier of the member and group  
18 which originated the message.

19. The method of Claim 1, further including the step of:

20 including in the header to the message an identifier of the member and group  
21 of the parent protocol originator, if any, which originated the message.

1       5. A computer system including a plurality of groups, each group composed of  
2       one or more members, said computer system forwarding diagnostic messages among  
3       the members of the groups and including:

4               means for forming a message including in its header message the following  
5       header fields:

6               (1) a protocol handle identifying the originator protocol from which  
7       the request originated; and  
8               (2) a forwarding handle identifying, if present, a protocol which is  
9       the current parent of the protocol;

10               means for sending the diagnostic message to the member of the group  
11       identified by the forwarding handle.

12       6. The computer system of Claim 5, wherein the identified forwarding handle is  
13       of null value and the protocol is an original protocol, and said means for sending  
14       comprises:

15               means for sending the diagnostic message to the member of the group which  
16       originated the protocol.

17       7. The computer system of Claim 5, wherein said means for forming a header  
18       message further includes:

19               means for including in the header to the message an identifier of the member  
20       and group which originated the diagnostic message.

21       8. The computer system of Claim 5, wherein said means for forming a header  
22       message further includes:

23               means for including in the header to the message an identifier of the member  
24       and group of the parent protocol originator, if any, which originated the diagnostic  
25       message.

1        9. A computer memory element containing stored in signal bearing media a  
2 diagnostic message forwarded among members of one or more groups in a computer  
3 system, the stored diagnostic message containing a header message including the  
4 following header fields:

5              (1) a protocol handle identifying the originator protocol from which the  
6 request originated; and  
7              (2) a forwarding handle identifying, if present, a protocol which is the  
8 current parent of the protocol.

1        10. The computer memory element of Claim 9, wherein the header message  
2 contained in the stored diagnostic message further includes:

3              an identifier of the member and group which originated the diagnostic  
4 message.

1        11. The computer memory element of Claim 9, wherein the header message  
2 contained in the stored diagnostic message further includes:

3              an identifier of the member and group of the parent protocol originator, if any,  
4 which originated the diagnostic message.

1        12. A method of forwarding diagnostic messages among members of groups in a  
2 data processing system to those members executing protocols implicated by the  
3 message, comprising the steps of:

4              forwarding as part of the diagnostic message a header including the following  
5 header fields:

6              (1) a protocol handle identifying the originator protocol from which  
7 the request originated; and  
8              (2) a forwarding handle identifying, if present, a protocol which is  
9 the current parent of the protocol;

10 examining the forwarding handle at each member of the groups of the system  
11 to ascertain if that member was a parent of the protocol identified in the forwarding  
12 handle field of the header of the diagnostic message.

13 13. The method of Claim 12, further including the step of:  
14 forwarding another diagnostic message having a header including the  
15 following header fields:

16 (1) a protocol handle identifying the originator protocol from which  
17 the request originated; and  
18 (2) a forwarding handle identifying, if present, a protocol which is  
19 the current parent of the protocol.

20 14. The method of Claim 13, further including the step of:  
21 sending the diagnostic message to the member of the group identified by the  
22 forwarding handle of another diagnostic message.

23 15. The method of Claim 14, further including the step of:  
24 repeating the steps of Claims 13 and 14 until the forwarding handle of the  
25 header field indicates the protocol is an original protocol.